



**S712D**

## Product Specification



### Description: Universal Data Repeater

#### Features

- ✓ All-in-one data: RS232, RS422, RS485 Manchester, Biphase, TTL
- ✓ Field-configurable data format
- ✓ Drop and insert repeater function
- ✓ Self-healing ring capability
- ✓ Redundant point-to-point capability
- ✓ Unique data translation function
- ✓ Standard optical budget 18 dB; higher budgets available
- ✓ Forever Warranty™

#### Description

The S712D Universal Data Repeater is part of Fiber Options' revolutionary family of multiprotocol data links. This model series adds four new data functions to the Fiber Options line: (1) It acts as a repeater to extend the operating distance of an S711D or S712D system; (2) It provides drop-and-insert capability to a linear data system with up to 32 nodes; (3) It can be configured as a redundant point-to-point system; (4) It can be configured as a self-healing ring with up to 32 nodes.

Like the other members of the Universal Data family, this link handles all major data formats in both directions. It is not necessary to order or stock different models to support different data formats. The S712D also features the very valuable data translation function that allows input of one data format and output of a different format.

The S712D has extensive built-in diagnostics, including a self-test data generator that makes it possible to test a link without having to connect external data equipment.

#### Basic Model Descriptions

**S712D-2** Two-fiber link transmits at 850 and 1300 nm for two-way communication.

**S712D-4** Four-fiber link transmits at 850 nm over separate fibers for two-way communication.

**S712D-4L** Four-fiber link transmits at 1300 nm over separate fibers for long-distance two-way communication.

For a complete list of available models, please refer to Table 1

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# SERIES S712D

## TECHNICAL INFORMATION

### ELECTRICAL

Input Voltage:		Heat Equivalent**:	0.4 Btu/min 0.1 cal/min
Standalone Modules:	12 - 16 VDC	Protection:	Solid-state short circuit protection (no fuse required)
Rack Modules:	13.5 - 16 VDC	Rack Card Replacement:	Cards may be removed and installed without powering-down the card cage (hot swappable).
Current Requirement:	500 mA		
Power Consumption:	7 W		
Rack Module Power Factor*:	4		

\*For an explanation of the Power Factor, please see the product specification for the 515R or 517R racks or the Fiber Finder™.

\*\*This represents the conversion of all input power to heat. The actual heat generated will be less.

### DATA SIGNAL

Number of Channels:	1	Baud Rate, cont. Biphase = 250 kbps
Data Direction:	Tx ↔ Rx, bidirectional	RS422 = 512 kbps
Data Formats:	RS232 (3-wire and 5-wire), TTL, RS422, Manchester, Biphase, Sensonet™, RS485 (2-wire and 4-wire) with 200 mV, 1 V, and 2 V offsets	RS485 = 512 kbps TTL = 512 kbps
Baud Rate:	RS232 = 250 kbps Manchester = 250 kbps	Bit Error Rate: <math>10^{-9}</math>

**Data Translation:** Allows translation from one format to another. Eliminates the need for external translation devices. Physical translation only; not protocol interpretation. Manchester and Biphase excluded.

### DATA INTERCONNECTION

Recommended Maximum Distances	Recommended Cable
Data Equip to Tx: ≤50 ft (15 m)	Type: Shielded twisted pair
Rx to Data Equip: ≤50 ft (15 m)	Gauge: 20 - 22 AWG
	Conductors: Determined by data format

### ENVIRONMENTAL

Temperature Range	Humidity Range
in Operation: -40° to +167° F (-40° to +75° C)	in Operation: 0 to 95% relative, noncondensing
Temperature Range	Humidity Range
In Storage: -40° to +185° F (-40° to +85° C)	in Storage: 0 to 95% relative, noncondensing

### CONNECTORS:

Optical:	ST type
Data:	8-position detachable screw terminal connector.
Power Input:	Standalone modules: 4-position detachable screw terminal connector. Rack modules plug directly into the rack.

### OPTIONS

Power Supply	See Table 1
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### CONTROLS

Data Format:	16-position rotary switch
Fiber Mode:	16-position rotary switch
Alarm Disable:	Internal jumper (rack modules)

## SERIES S712D

### TECHNICAL INFORMATION

#### OPTICAL

Wavelengths:	Refer to Table 1	Self-Healing Ring, Maximum Circuit Length Selections:	1, 3, 5, 10, 15, 20, 30, 50, 70, 100, 150, 250, 350, 500 km
Optical Mode:	Multimode	Emitter Type:	LED
Optical Budget:	18 dB standard; higher budgets available	Fiber Type:	62.5 μm
Configurations:	Redundant point-to-point (RPTP)* Drop, insert, repeat (DIR) Self-healing ring (SHR)	Modulation Type:	Digital
Operating Distance, Point-to-Point**:		Gain Control:	Optical automatic (OAGC)
S712D2:	4.5 mi (7.2 km)	Transmitter Launch Power:	- 14 dBm
S712D4:	4.5 mi (7.2 km)	Receiver Sensitivity:	- 32 dBm
S712D4L:	15 mi (25 km)		
Operating Distance Between Nodes, Drop/Insert/Repeat**:		*Simple (nonredundant) point-to-point systems should use S710D or S711D series units instead of S712D series.	
S712D2:	4.5 mi (7.2 km)	**Operating distance is approximate and assumes best fiber. It will be affected by the type and number of splices in the fiber.	
S712D4:	4.5 mi (7.2 km)		
S712D4L:	15 mi (25 km)		

#### INDICATORS

All Modules: Level/Loss™ (2 per module), Data Input, Data Output, and Data Enable

#### MECHANICAL

##### Standalone Modules

Dimensions:	Length: 5.05 in (128 mm) Width: 4.84 in (123 mm) Height: 1.63 in (41 mm)
Weight:	1.21 lb (0.55 kg)
Shipping Dimensions:	Length: 8.5 in (216 mm) Width: 7.5 in (190 mm) Height: 3.5 in (89 mm)
Shipping Volume:	0.13 cu ft (0.0037 cu m)
Shipping Weight:	1.78 lb (0.81 kg)
Construction:	Steel
Finish:	Grey textured paint
Mounting Method:	4 No. 6 (3 mm) screws

##### Rack Modules:

Module Width:	1 slot, 1.0 in. (25.4 mm)
Weight:	0.55 lb (0.25 kg)
Shipping Dimensions:	Length: 9.9 in (250 mm) Width: 5.4 in (140 mm) Height: 1.1 in (28 mm)
Shipping Volume:	0.034 cu ft (0.001 cu m)
Shipping Weight:	0.70 lb (0.32 kg)
Construction:	Aluminum
Finish:	Black semigloss paint

#### AGENCY COMPLIANCE AND MTBF

Emissions:	FCC Part 15, ICES-003, AS/NZS 3548, EN55022	Safety:	UL1950, CAN/CSA 22.2, NO.950-95
Immunity:	ENV50204 EN61000-4-2, 3, 4, 5, 6, 11	MTBF:	>100,000 hours

**FCC** PART 15 COMPLIANT



# SERIES S712D

## TECHNICAL INFORMATION

**TABLE 1: MODEL VARIATIONS**  
(Models for highway applications are also available.)

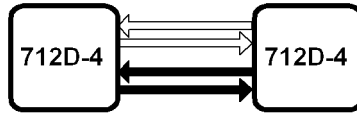
Model Number	Function	Enclosure Type*	Fiber Size	No. of Fibers	Max. Atten.	Wave-length	Power Supply Model
<b>Standalone Modules</b>							
S712D-EST2	Transceiver	4 X 4 X 2	62.5	2	18	850, 1300	615P
S712D-EST4	Transceiver	4 X 4 X 2	62.5	4	18	850	615P
S712D-EST4L	Transceiver	4 X 4 X 2	62.5	4	18	1300	615P
<b>Rack-Mount Modules</b>							
S712D-RST2	Transceiver	515R1, 517R1	62.5	2	18	850, 1300	Powered by rack
S712D-RST4	Transceiver	515R1, 517R1	62.5	4	18	850	Powered by rack
S712D-RST4L	Transceiver	515R1, 517R1	62.5	4	18	1300	Powered by rack

\*\*For exact dimensions, see the MECHANICAL section.

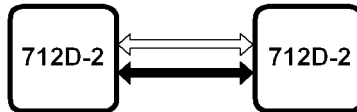
## TYPICAL SYSTEM CONFIGURATIONS

**Figure 1. Redundant Point-to-Point**

Four-Fiber System: Simplex Transmission

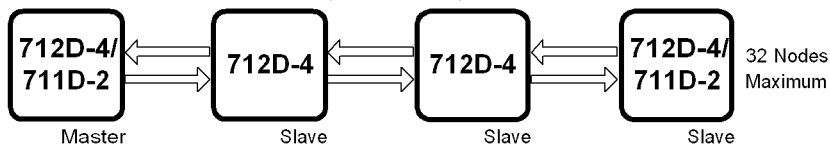


Two-Fiber System: Duplex Transmission

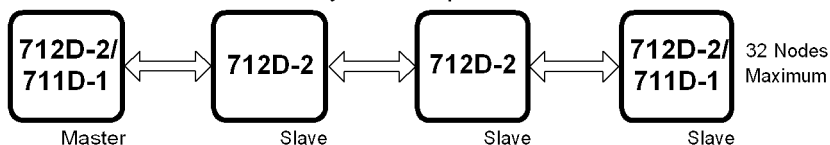


**Figure 2. Linear Drop/Insert/Repeat**

Four-Fiber System: Simplex Transmission



Two-Fiber System: Duplex Transmission

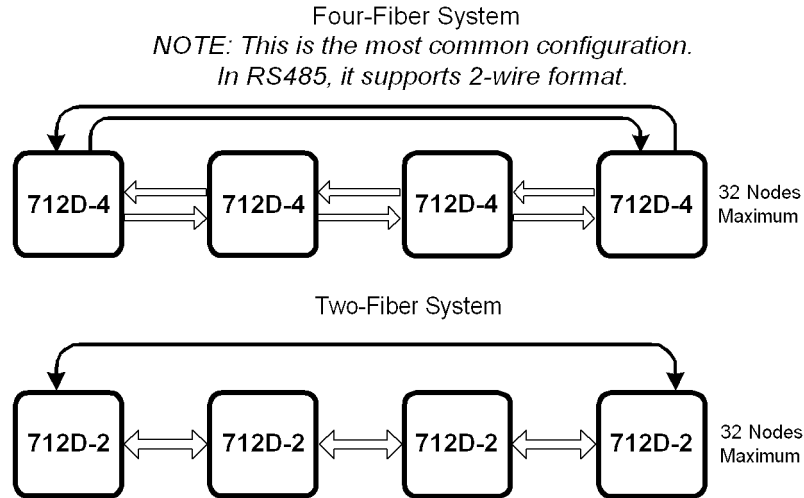


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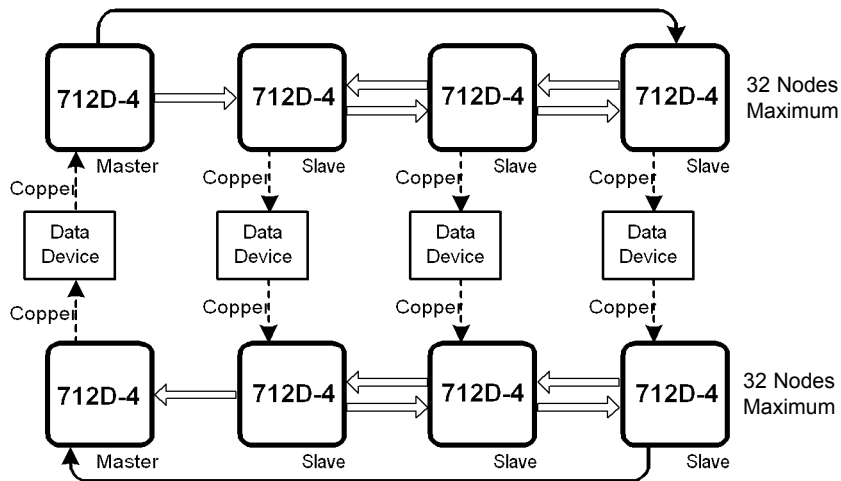
## TYPICAL SYSTEM CONFIGURATIONS

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**Figure 3. Self-Healing Ring Configuration, Half Duplex**



**Figure 4. Self-Healing Ring Configuration, Full Duplex**



# S712D

## Product Specification

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